

REMARKS

Claims 1-22 are pending in the application. Claims 1, 2, 4-7, 9, 11-15, 18, 20 and 21 are amended. The amendments do not add new matter and entry at this time is proper.

Favorable reconsideration and allowance of the present patent application are respectfully requested. These amendments, in conjunction with the following remarks, are believed to place the application in immediate condition for allowance. Accordingly, entry of these amendments and favorable consideration of the application are respectfully requested in view of the foregoing amendments and the following remarks.

Applicant acknowledges with appreciation the courtesy extended to Applicant's representative by the Examiner during the telephone interview conducted on July 15, 2003. The independent claims are amended in accordance with the telephone interview.

Allowable Subject Matter

Applicant notes with appreciation the indication on page 5 of the Office Action that claim 22 would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims.

Office Action

Claim 21 stands rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claims 1-4, 6, 11, 12, 14, 16, 18, 19 and 20 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Patent No. 5,680,225 (Hirabayashi et al.). Claim 5 stands rejected under 35 U.S.C. § 103(a) as allegedly rendered obvious by Hirabayashi. Claims 7-10, 13, 15, 17 and 21 stand rejected under 35 U.S.C. § 102(e) as allegedly anticipated by U.S. Patent No. 5,907,640 (Delean). Applicant respectfully traverses the rejections in view of the foregoing amendments and the following remarks.

Indefiniteness

Claim 21 is rejected as allegedly being indefinite. This rejection is respectfully traversed. Applicant amends claim 21 to depend from claim 5 in view of the Examiner's suggestion. Thus, the rejection is rendered moot. Applicant respectfully requests that the Examiner withdraw the indefiniteness rejection.

Hirabayashi

Claims 1-4, 6, 11, 12, 14, 16, 18, 19 and 20 are rejected as allegedly anticipated by Hirabayashi. Claim 5 is rejected as

allegedly rendered obvious by Hirabayashi. These rejections are respectfully traversed.

To anticipate, the cited patent must disclose each and every element of the claimed invention. Applicant maintains that Hirabayashi does not disclose each and every element of the claimed invention for the reasons given below.

Independent claim 1 is directed to an image conversion method in which image data represented by a required number of pixels is obtained from original image data represented by a predetermined number of pixels. The method of claim 1 includes carrying out a first image conversion by obtaining, by a first interpolation calculation, image data represented by a number of pixels which is one-half of the predetermined number of pixels, from the original image data represented by the predetermined number of pixels. The method of claim 1 also includes preparing an intermediate image by repeatedly carrying out the first image conversion at a rate of one-half of the number of pixels, until a number of pixels close to the required number is reached. The method of claim 1 also includes carrying out a second image conversion by obtaining, from the intermediate image, image data represented by the required number of pixels.

Further, independent claim 6 is directed to an image conversion method in which image data represented by a required

number of pixels is obtained from original image data represented by a predetermined number of pixels by repeatedly carrying out a first interpolation calculation at a rate of one-half of the number of pixels, wherein image data represented by the required number of pixels is obtained by carrying out a second interpolation calculation at a rate of x (wherein $1 > x > 1/2$) of a number of pixels at one of a beginning step, and intermediate step, and a final step of image conversion.

Hirabayashi relates to image reduction with fine-line protection. Hirabayashi describes an image reduction technique in which, to facilitate subsequent one-half pixel reduction, the original image is initially enlarged. Subsequently, one-half pixel reduction is repeatedly performed. See, e.g., Figures 7A-D of Hirabayashi. The reduction is carried out a set number of times to obtain a final image. Column 5, lines 48-50. The image reduction technique of Hirabayashi does not use repeated one-half pixel reduction to obtain an intermediate image having close to the required number of pixels, and then carryout a second conversion to obtain the final image.

In contrast, the present invention discloses the use of a first image conversion and a second image conversion. The first image conversion is used for the repeated one-half reduction to generate an intermediate image. The second image conversion is

used in the final reduction on the intermediate image to generate the final required number of pixels. Hirabayashi does not disclose this feature. Further, the present invention also discloses a first interpolation calculation and a second interpolation calculation, wherein the second interpolation calculation, differs from the first interpolation calculation. Hirabayashi does not disclose this feature as well.

Hirabayashi only performs an initial enlargement, followed by repeated one-half pixel reduction to attain a final image, as opposed to a first image conversion to an intermediate image, followed by a second image conversion to a final image. The reduction of Hirabayashi is performed a set number of times and not according to a number of pixels close to the required number. These features of Hirabayashi do not disclose Applicant's invention.

Applicant respectfully submits that independent claims 11, 12, 14 and 18 define over Hirabayashi based on similar reasoning. Furthermore, claims 2-4 and 16 define over Hirabayashi for at least based on their dependence from one of the above-mentioned independent claims, as well as their own merits. Thus, Applicant respectfully requests that the Examiner withdraw the anticipation rejections.

Furthermore, Applicant respectfully submits that dependent claim 5 defines over the teachings of Hirabayashi at least in view of its dependence from claim 1, as well as on its own merits. As noted above, claim 1 is not disclosed by Hirabayashi. Applicant also maintains that Hirabayashi does not suggest all the claim limitations of claim 1. If an independent claim is not obvious, then any claim depending from the independent claim is non-obvious. MPEP § 2143.03. Further, the Office Action's reliance on the teachings of Hirabayashi fails to make-up for the above-noted deficiencies of Hirabayashi. Therefore, claim 5 is not rendered obvious by Hirabayashi. Applicant respectfully requests that the Examiner withdraw the obviousness rejection.

Delean

Claims 7-10, 13, 15, 17 and 21 are rejected as allegedly anticipated by Delean. To anticipate, the cited patent must disclose each and every element of the claimed invention. These rejections are respectfully traversed.

Independent claim 7 is directed to an image conversion method in which image data represented by a required number of pixels is obtained from original image data represented by a predetermined number of pixels. The method includes obtaining by interpolation calculation, from the original image data

represented by the predetermined number of pixels, image data represented by a number of pixels of $1 / N$ or greater, wherein N is an integer of 2 or more, by using an N -size filter used to obtain an interpolated point from N pixels, thereby allowing image conversion. The method also includes obtaining image data represented by the required number of pixels by carrying out the interpolation calculation in plural stages.

Delean relates to a function interpolating transformation system for image processing. Delean describes a series of images constructed by decimation by a factor of 2. As depicted in Figure 5 of Delean, successive reduction by one-half in each dimension is illustrated to describe a series of one-half decimation of pixels in each dimension. Delean, however, does not disclose obtaining image data represented by the required number of pixels by carrying out the decimation operation in plural stages.

Applicant maintains that Delean does not disclose each and every element of the claimed invention. Specifically, Delean does not disclose obtaining image data represented by the required number of pixels by carrying out the interpolation calculation in plural stages.

In contrast, for example, claim 7 recites obtaining image data represented by the required number of pixels by carrying out the interpolation calculation in plural stages. By carrying out the interpolation calculation in plural stages, a larger number of original pixels are reflected in the required number of pixels. Referring to Delean, decimating image data by factor 2 does not disclose this feature. Delean does not disclose decimating pixels in plural stages during image conversion. Thus, for at least these reasons Applicant respectfully submits that Delean does not disclose each and every element of the claimed invention.

Furthermore, independent claims 13 and 15 define over Delean based on similar reasoning. Claims 8-10 and 17 define over Delean at least for depending from one of the above-mentioned independent claims, as well as their own merits. Thus, Applicant respectfully requests that the Examiner withdraw the anticipation rejections.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact William F. Nixon (Reg. No. 44,262) at the telephone number of the undersigned below, to conduct an interview

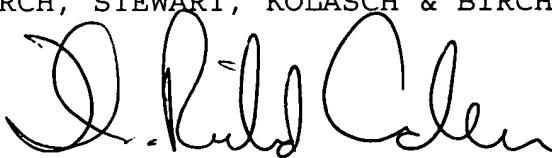
in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By



D. Richard Anderson, #40,439

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000


DRA/WFN/kpc